



# Separator Cartridges

## Filter/Separator 2nd Stage Elements

### Features

- Optimum 2nd stage water removal
- Choice of Teflon® Coated Screen, Synthetic or Pleated Paper Media
- Field proven performance
- Largest selection of replacement elements

### General

Separator Cartridges are employed as the second stage in filter/separator vessels. Their sole function is to repel coalesced water drops produced by the first stage cartridges while allowing hydrocarbon fluids to pass through. Water drops settle into the filter/separator sump and are not carried downstream. All particle filtering is done by the first stage coalescer cartridge.

### How Separator Cartridges Work

Flow direction is from outside-to-inside. The top photo insert shows water being repelled by the hydrophobic separator medium on the cartridge's outside surface. Hydrocarbon fluids, on the other hand, easily pass through and exit the separator cartridge. Cartridges with three different types of repelling media are offered:

**Teflon Coated Screen (TCS) Cartridges** are, by far, the most popular type of separator cartridge. With proper cleaning and inspection (see Velcon Form #1242), cost effective TCS elements can be **reused** over many coalescer cartridge changeout cycles. And, TCS cartridges generate considerably less static charge than pleated paper cartridges. These features have made them the preferred choice for aircraft fueling applications.

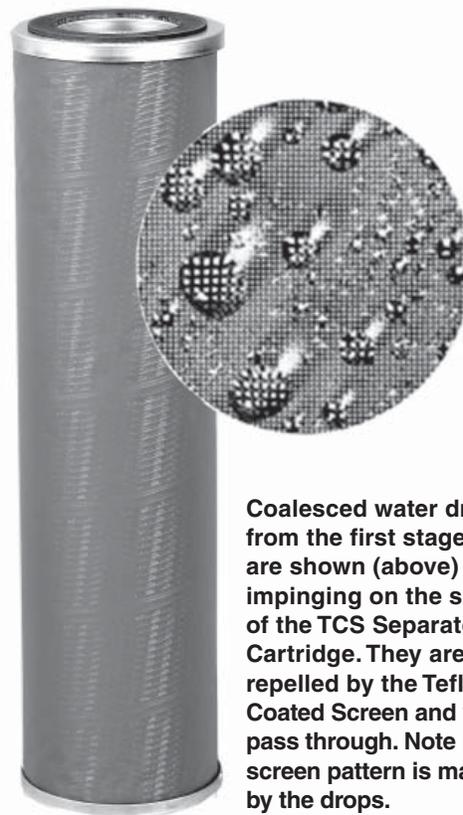
**Pleated Paper Cartridges** cannot be reused and are replaced at every coalescer cartridge changeout. They are often used with diesel and other fuel oils which may contain materials that adhere to TCS cartridges and cannot be cleaned off.

**Synthetic Media Cartridges** can be cleaned a maximum of two times. They are intended for customers who do not want to take the time to clean separators.

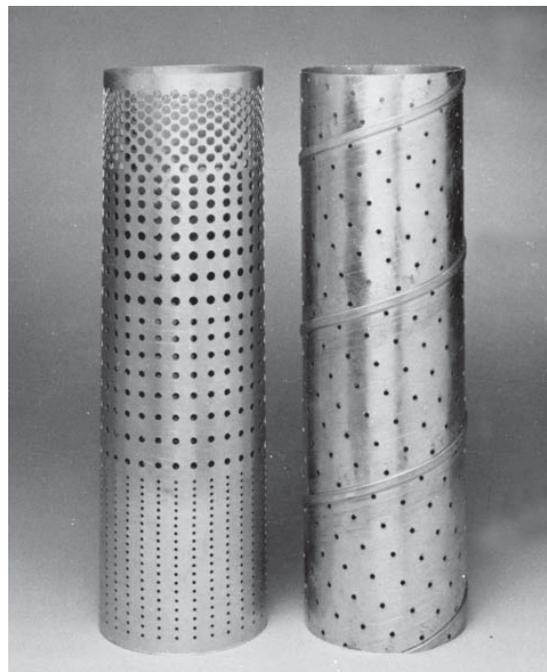
### Separator Cartridge Performance

Maintaining a uniform flow along the length of the cartridge optimizes performance and reduces the number of cartridges required. Flow is controlled by a tube, inside each cartridge, through which the hydrocarbon fluid exits the cartridge and the filter/separator vessel. Two styles of inner tube are offered. See bottom photo.

Cartridges with uniform hole pattern inner tubes are adequate for many applications. However, where optimum flow distribution is required, cartridges with variable hole pattern inner tubes are recommended. When converting older equipment, a lesser number of variable hole pattern cartridges is usually required. Operating costs will therefore be reduced.



Coalesced water drops from the first stage are shown (above) impinging on the surface of the TCS Separator Cartridge. They are repelled by the Teflon Coated Screen and will not pass through. Note how the screen pattern is magnified by the drops.



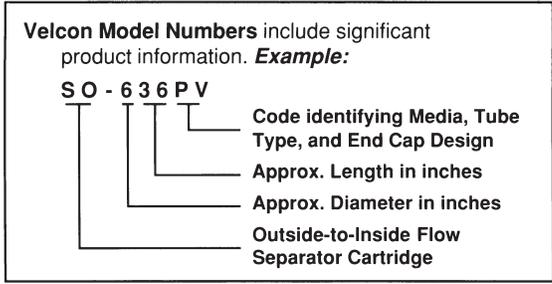
Variable Hole Pattern  
Inner Tube

Uniform Hole Pattern  
Inner Tube

®Teflon is a registered trademark of E.I. du Pont de Nemours & Co., Inc.

# Separator Cartridges

**Model number system.** Refer to box at right and table below. Note that "C" in the code always means a Uniform hole pattern inner tube with TCS media, and "V" means Variable hole pattern with TCS media. Blind caps have a hole for the tie rod.



## Cartridge Code Identification

Model Number	Flow Control Hole Pattern	OD	Mounting End ID	Opposite End ID	Media
SO-3xxC	Uniform	3 <sup>1</sup> / <sub>16</sub> "	1 <sup>15</sup> / <sub>16</sub> "	Blind	TCS
SO-3xxV	Variable	3 <sup>1</sup> / <sub>16</sub> "	1 <sup>15</sup> / <sub>16</sub> "	Blind	TCS
SO-4xxC	Uniform	4 <sup>9</sup> / <sub>16</sub> "	3 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-4xxV	Variable	4 <sup>9</sup> / <sub>16</sub> "	3 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-6xxC	Uniform	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	TCS
SO-6xxCA	Uniform	6"	3 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-6xxCM	Uniform	6"	4 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-6xxVA (5)	Variable	6"	3 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-6xxV (5)	Variable	6"	4 <sup>1</sup> / <sub>2</sub> "	Blind	TCS
SO-6xxPV (5)	Variable	6"	4 <sup>1</sup> / <sub>8</sub> "	Blind	TCS
SO-6xxPLF3 <sup>(1)</sup>	Uniform	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	Pleated Paper
SO-6xxPLBZ <sup>(1)</sup>	Uniform	6"	3 <sup>1</sup> / <sub>2</sub> "	Blind	Pleated Paper
SO-6xxCSN*	Uniform	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	Synthetic
SO-6xxCMSN*	Uniform	6"	4 <sup>1</sup> / <sub>2</sub> "	Blind	Synthetic
SO-6xxCPSN*	Uniform	6"	4 <sup>1</sup> / <sub>8</sub> "	Blind	Synthetic
SO-6xxVASN	Variable	6"	3 <sup>1</sup> / <sub>2</sub> "	Blind	Synthetic
SO-6xxVSN	Variable	6"	4 <sup>1</sup> / <sub>2</sub> "	Blind	Synthetic
SO-6xxPVSN	Variable	6"	4 <sup>1</sup> / <sub>8</sub> "	Blind	Synthetic

### Table Notes

SO Series cartridges listed in Code Identification Table at left are the most commonly used types. A variety of other styles are available for special applications. Contact your Velcon distributor for details.

SO-6xxPLF3 pleated separators come in lengths of 11, 14, 16, 29 and 33 inches. SO-6xxPLBZ pleated separators come in lengths of 22, 29, 33 and 44 inches. Frequently, they are installed in stacks of two or three cartridges.

SO-6xxC cartridges are available in these same stackable lengths plus longer lengths. However, single-unit designs are recommended for installation ease and lower cost. Other styles listed in Table are not intended to be stacked.

Velcon variable size hole pattern cartridges should not be replaced with uniform hole pattern cartridges unless appropriate full-scale test data can be supplied showing equivalent performance.

For more information about API/EI 1581 5th Edition qualified separators, please see data sheet 1923.

SO-6xxCSN/CMSN/CPSN separators are intended for customers who want a separator for disposal rather than clean and re-use (can be cleaned a maximum of two times).

1. Please note: The shelf life for pleated paper separators (for example, SO-xxxPLF3 and SO-6xxPLBZ) is one year.

\* U.S. Patent No. 6,068,723 and 6,415,930

## General Specifications

- TCS medium is 200 mesh stainless steel screen coated on both sides with green Teflon. The screen is lockseam folded and fastened with an internal aluminum clip.
- Pleated medium is silicone treated resin impregnated paper with a protective outer aluminum screen jacket.
- Tubes are aluminum.
- End caps are aluminum and/or glass filled nylon.
- Gaskets are Buna-N.
- pH range is 5 to 9.
- Maximum operating temperature is 200°F.




Velcon products are sold and serviced by a world-wide representative network. To order, contact Headquarters or your **LOCAL REPRESENTATIVE**:

**COMPANY HEADQUARTERS:**  
 Velcon Filters, Inc.  
 1210 Garden of the Gods Road  
 Colorado Springs, CO 80907-3410  
 Phone: 1.800.531.0180 / 1.719.531.5855  
 Fax: 719.531.5690  
 e-mail: vfsales@velcon.com  
 www.velcon.com

**MANUFACTURING PLANTS LOCATED AT:**  
 Colorado Springs, Colorado  
 Sylacauga, Alabama  
 Henryetta, Oklahoma

**OVERSEAS AFFILIATES:**  
 Frankfurt/M., Germany & Singapore

**Liquid Filtration  
 and Separation  
 Specialists**